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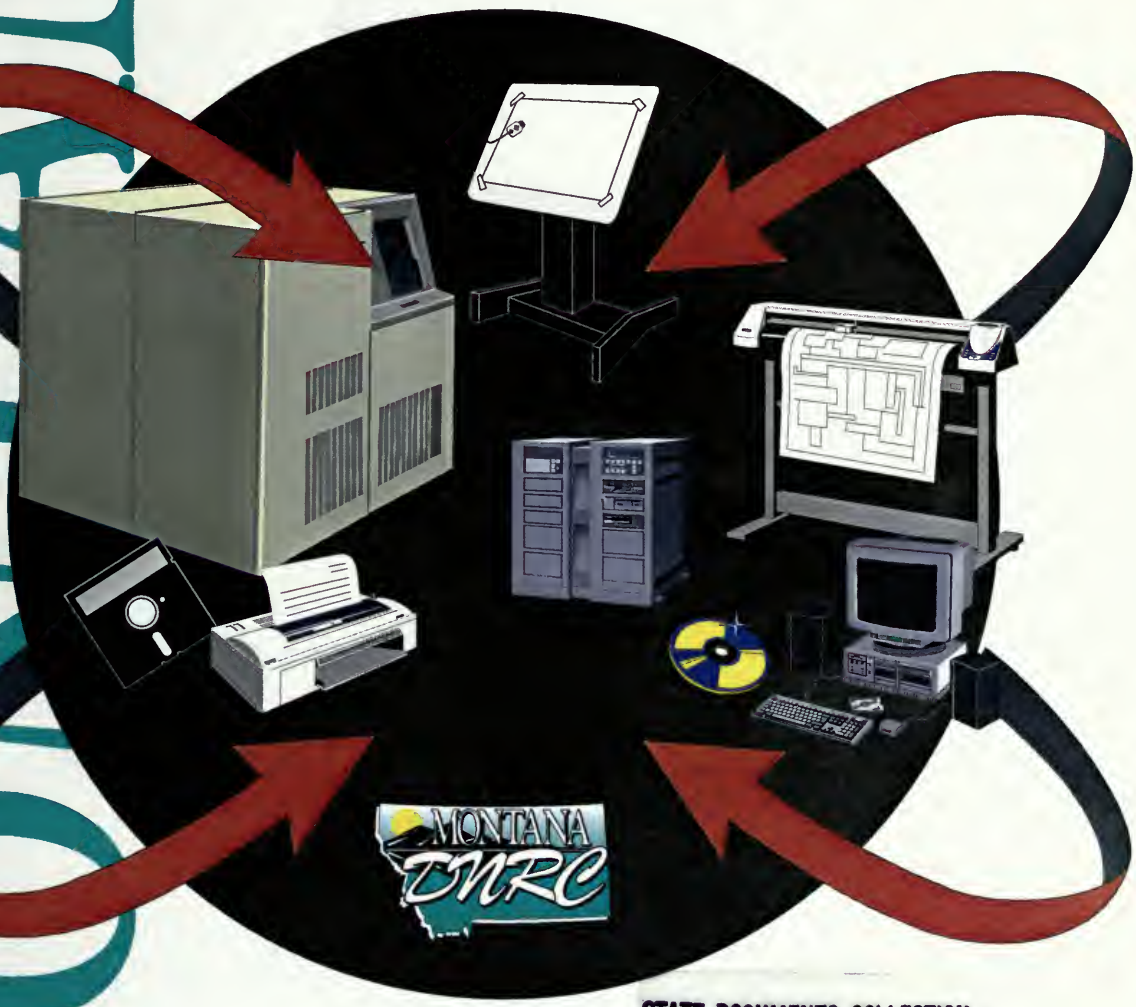
DNRC
Information Technology Plan



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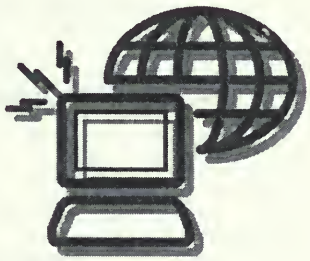
LIST OF ABBREVIATIONS

CARDD	Conservation and Resource Development Division, DNRC
CD-ROM	compact disk, read-only memory
CLO	Central Land Office, DNRC
CPU	central processing unit
DNRC	Montana Department of Natural Resources and Conservation
DPHHS	Montana Department of Public Health and Human Services
ELO	Eastern Land Office, DNRC
EPP	Executive Planning Process
FPA	fire protection assessment
FTE	full-time employee
FTP	file transfer protocol
FY	fiscal year
GB	gigabyte
GIS	geographic information system
IA	Initial Attack Station, DNRC
ISD	Information Services Division, Montana Department of Administration
ISP	Internet service provider
IT	information technology
ITB	Information Technology Bureau, DNRC
LAN	local area network
MB	megabyte
MBARS	Montana Budget Analysis and Reporting System
MBT	media-based training
MHz	megahertz
MIS	Management Information System
MT PRRIME	Montana Project to Reengineer the Revenue and Information Management System
N/a	not applicable
NELO	Northeastern Land Office, DNRC
NRCC	Northern Rockies Coordination Center
NRIS	Natural Resource Information System, Montana State Library
NWLO	Northwestern Land Office, DNRC
O&G	Oil and Gas Conservation Division, DNRC
PAMS	Property and Asset Management System
PC	personal computer
PLSS	Public Land Survey System
PPP	Payroll, Personnel, and Position Control System
RAM	random access memory
RFP	request for proposals
RO	Regional Office, DNRC
RWRCC	Reserved Water Rights Compact Commission, DNRC
SABHRS	Statewide Accounting, Budgeting, and Human Resources System
SBAS	Statewide Budgeting and Accounting System
SLO	Southern Land Office, DNRC
SWLO	Southwestern Land Office, DNRC
TLMD	Trust Land Management Division, DNRC
USFS	Forest Service, U.S. Department of Agriculture
VGA	video graphics adapter
WRD	Water Resources Division, DNRC

DNRC INFORMATION TECHNOLOGY PLAN

PLANNING RANGE
MAY 2000 - JUNE 2005



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Information Technology Task Force
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EXECUTIVE SUMMARY

This document is the 2000 revision of the *DNRC Information Technology Plan*. The purposes of this document are (1) to identify information technology (IT) objectives at the Department of Natural Resources and Conservation (DNRC), and (2) to plan the steps needed to achieve those objectives. Major issues examined in the 1998 IT plan are re-examined in this version, and new IT issues at DNRC are discussed.

A new IT issue raised by the 1999 legislature is IT spending at state agencies. As part of an interim information technology management study, agencies are required to track information technology expenditures. DNRC will comply by aggregating expenditure codes for hardware, software, training, and system development costs. Additionally, agencies are now required to post their goals and objectives on their websites and to update their progress every six months. DNRC is currently complying.

The Centralized Services Division carried the proposal to network our non-networked field offices to the 1999 Montana State Legislature. Funding was awarded for this project. Work on this project began with the Lewistown office in July 1999. All targeted DNRC field offices will be networked by June 2001.

The largest of the 1998 objectives in terms of funding, labor, and planning was the objective to redesign the department's mainframe databases. The Trust Lands Management Division was awarded funding to redesign the trust lands management system. The Oil and Gas Conservation Division has federal grants to create a new computer system for its oil and gas data. The Water Resources Division devoted a full-time employee to work on the water rights database. All of these projects are currently in progress.

Agency imperatives in the year 2000 plan include computer training, the Statewide Accounting, Budgeting, and Human Resources System (SABHRS), computer software and hardware, data communications, major software systems, managing natural resources using geographic information systems (GIS), and the DNRC web presence. Table 1 on the next two pages lists the objectives for the 2002/2003 biennium.

Nearly all of the department's business is performed using computers. Training on the use of these systems is a must. The biggest problem with SABHRS right now is personal services reporting. Computer hardware and software is an issue within the department in terms of standards and replacement cycles. Data communications is an area where DNRC must attempt to gain as much efficiency as possible--like the field office networking project. Currently, DNRC's major software systems are undergoing major changes. DNRC must be careful that the end products from these changes meet the department's needs. DNRC is experiencing tremendous growth in the GIS arena--projects and programs need to be managed carefully. More and more demands will be placed on DNRC's website. Managing this resource will become a major task.

Table 1. DNRC PLANNING TASK FORCE - OBJECTIVES

OBJECTIVE	DESCRIPTION	PROJECTS	PLAN	IMPLEMENT-ATION DATE	FUNDING REQUIRED
Redesign DNRC Databases	Migrate aging mainframe systems to modern platforms allowing greater efficiencies for department staff, state government, and the public	Develop a new Fire Protection Assessment (FPA) computer system to replace a 12 year-old mainframe and PC/DOS-based system (Forestry)	Analyze business needs, write an RFP, and contract with a vendor to design, develop, and implement a new system	07/2001 through 06/2002	$120,000 One-Time
		Hire a full-time dedicated support person for the new Trust Land Management System (TLMD)	Hire one grade 16 information systems specialist to perform database administration and programming tasks	07/2001	$48,000 Annually
		Develop and maintain Internet access to the new Water Rights system; develop a database for water rights policy and procedure manuals (WRD)	Collaborate with NRIS to develop the Internet access to the water rights system. Hire contractors to develop the manuals database	07/2001 through 06/2002	$109,000 Start-up, of which $10,000 per year is ongoing
		Complete second phase of Hazard Reduction Agreements (HRA) system.	Hire contractors to write programs which allow field offices and lumber mills to directly interface with master HRA system in Missoula	07/2001	$23,600 One-time
Take advantage of GIS technology	Aggressively use GIS technology to the fullest extent possible in managing natural resources	Add additional personnel and equipment to enhance WRD's ability to provide information to the public and support internal GIS operations (WRD)	Add three grade 14 GIS specialists and the required hardware and software to the GIS program in the Water Resources Division	07/2001	$371,520 Start-up, of which $146,800 per year is ongoing
		Electronically store water rights maps and aerial photos; convert *Water Resources Surveys* to digital data (WRD)	Hire two grade 12 temporary GIS technicians and buy required equipment to scan and digitize water rights maps, photos, and *Water Resources Surveys*	07/2001 through 06/2003	$215,762 One-time

Enhance data communica-tions	Continually seek more efficient and effective technology to improve department operations and service to the public	Replace old, failing, and inadequate network wiring in the Missoula Forestry complex (Forestry)	Replace 103 network wall jacks; wiring will be performed under state wiring term contract	07/2001	$25,750 One-time
Ensure that DNRC computer users are adequately trained	New software and systems are constantly being deployed at DNRC. It is imperative that users be provided training on new software and systems.	None	Identify training needs for new systems and future software upgrades, and plan accordingly; super-visors need to survey staff training needs on a regular basis; budget managers need to budget for training	Continuous	Divisions can use this plan as justification for training funding
Develop DNRC web site	Work to take full advantage of the Internet in terms of agency communications and service to the public	Have one department webmaster to design and maintain the department website	Hire one grade 15 website administrator to design and maintain DNRC web pages	07/2001	$35,700 Annually
Support Natural Resource Information System (NRIS)	DNRC is named as a "source agency" in legislation that allows earmarking NRIS financial support as a line item in agency budgets	NRIS has asked DNRC to submit an EPP proposal seeking $100,000 in general funds to pass on to NRIS for FY 2002/2003.	Write an EPP proposal seeking $100,000 to help fund operations at NRIS for the FY2002/2003 biennium	07/2001	$100,000 per biennium ongoing

INTRODUCTION

In October 1997, the Department of Natural Resources and Conservation (DNRC) Leadership Team determined that the agency needed to conduct long-range planning in the information technology (IT) field. A long-range IT plan will allow the department to identify IT objectives and provide a "road map" showing how to achieve those objectives. What follows is the *DNRC Information Technology Plan* through June of 2004.

Information technology changes constantly. Business priorities and methods change. Given the changing nature of IT and state government, this plan must be subject to change and review. Our intention is to provide the best IT "road map" for DNRC at this time. We propose that the plan be reviewed annually and revised in years prior to legislative sessions (in even-numbered years). In this manner, the *DNRC Information Technology Plan* will be updated and extended every other year and will always be valid and current.

CURRENT IT STATUS

AGENCY COMPUTING PLATFORMS AND SOFTWARE SYSTEMS

DNRC has software systems on the state mainframe, on Novell network servers, and on personal computers (PCs). Our largest software systems, the Trust Land Marketing System and the Water Rights System, reside on the state mainframe. Several mid-size, multi-user database systems reside on the department's Novell network. Many smaller software systems run on the Novell platform as well. Single-user software systems reside on personal computers throughout the department.

The most common computing platforms at DNRC are the Novell network and the desktop PC. All of our desktop software programs (word processing, spreadsheets, database) reside on either the desktop PCs or the Novell file servers. For the past 10 years, the dominant trend in the IT industry and state government has been in the direction of PCs and PC networks.

INFORMATION TECHNOLOGY SERVICES

The Information Technology Bureau (ITB) provides primary support for all computing operations at DNRC. Additional services are available from the Information Services Division (ISD) in the Department of Administration. Services provided by the ITB include hardware and software procurement, installation, configuration, and

troubleshooting; system analysis and design; hardware and software support; software training; network design, installation, and maintenance; data communications installation, configuration, and support; data entry; and GIS services.

TELECOMMUNICATIONS AND NETWORKING

DNRC has a wide array of telecommunications and networking systems in place. The most common data communications system in the department is the local area network (LAN). We currently have 370 users at 16 sites attached to local area networks. Each of these sites is also connected to Summitnet, which is the state's wide area network. These users have desktop access to the state mainframe, all state network file servers, the Internet, and the state's e-mail system.

In the past, DNRC would always install a Novell file server as part of networking a field office. A new approach to networking small field offices is to install local area networks in the office without installing Novell. Instead of a Novell file server, a simple network storage device is installed on the network to allow file sharing between users. This approach greatly reduces the complexity of the network and greatly reduces the level of support required to maintain the network. Large offices with more than 10 users still require Novell-level security and communications abilities.

DNRC field offices with fewer than three users do not require mainframe or network access, but do need Internet and e-mail capabilities. These offices have arrangements with local Internet service providers (ISPs) that allow use of conventional PC modems and phone lines to access the Internet and state e-mail.

AGENCY IMPERATIVES

DNRC is currently faced with several IT problems and issues that must be managed from an agency perspective. The driving forces behind the need to create this plan are both external and internal. All of these factors affect IT operations across division boundaries and need to be resolved at the agency level. Following is a narrative on the nature and context of seven major IT issues that are facing the agency.

COMPUTER TRAINING

DNRC is continually developing new computer systems and adopting new software packages. The agency is progressive in adopting new software but user training falls behind. Training is currently needed in software packages such as Microsoft Office

and the SABHRS modules. In-house training is currently not a viable solution due to a lack of facilities and training staff. Some offices, such as the Forestry complex in Missoula, have developed excellent training arrangements with local software training providers. Computer training for users in small communities is often nonexistent. This plan explores some options and provides some solutions for computer training at DNRC.

SABHRS (MT PRRIME)

The 1997 Montana Legislature approved funding to replace the state's core business software. Parts of the core systems—SBAS (finances), PAMS (asset management), and PPP (human resource management)—have been in use for 25 years. The Montana Project to Reengineer the Revenue and Information Management Environment (MT PRRIME) replaces the aging systems with new, state-of-the-art software. In 1999, MT PRRIME was renamed Statewide Accounting, Budgeting, and Human Resources System (SABHRS).

Great strides have been made with the SABHRS system since the initial rollout. However, some problems remain in terms of handling accounting transactions, producing needed personal services reports, and payroll glitches. The promise of desktop access to and manipulation of state accounting data has generally been abandoned by SABHRS administrators.

The issue facing DNRC is to ensure that all department managers are taking full advantage of SABHRS. Currently, all offices that need SABHRS access have the hardware and software to work on the system. However, training has been minimal, especially in the smaller offices. This plan examines options for providing SABHRS training and operations knowledge to DNRC users.

COMPUTER HARDWARE AND SOFTWARE

As we have seen over the past few years, changes in our computing environment can have dramatic effects throughout the agency. When the state switched to the Microsoft Office Suite, we found that we had to upgrade or replace older computers, upgrade versions of Windows, install the new software, and get training on the new software. Changes in our basic computing platform can have a huge impact on our workload, our way of doing business, and our budgets.

For the above reasons, we must anticipate future changes in desktop hardware and software. This plan identifies several trends in department and state computing and describes steps that we can take now to prepare for the future.

DATA COMMUNICATIONS

Over the past eight months, the IT Bureau has networked 10 of DNRC's field offices bringing the total number of networked offices in the department to 16. The effect of networking an office is dramatic. Users report drastic improvements in their ability to perform their duties. The challenge to DNRC is to continue to make effective use of communications technology, allowing our employees to provide more and better service to the public. Being a decentralized organization adds greater incentive for DNRC to take advantage of communications technology. This plan expands on and refines the field office networking project.

MAJOR SOFTWARE SYSTEMS

DNRC is burdened with large, outdated mainframe computer systems. Re-designing these systems is a priority for the department. Several re-engineering projects in varying degrees of completion are in progress. Computer systems must be replaced as business functions change and as the computing industry matures. Support for systems developed 12 years ago no longer exists. Our ability to use computers to accomplish our responsibilities changes over time--we can currently see ways to use computers effectively that we could not see 10 or 12 years ago. The plan examines the status of the trust lands system, the water rights system, the oil and gas system, and the fire protection system.

MANAGING NATURAL RESOURCES USING GIS

Geographical information systems (GIS) are used to represent data in a spatial manner. Proper use of GIS technology is critical to successful management of Montana's natural resources. GIS lends itself well to analyzing timber stands, roads, river drainages, oil and gas deposits, or agriculture and grazing leases. In our case, data on the geography, hydrology, wildlife, land use, mineral production, land ownership, water rights, and plant life of Montana can be analyzed spatially and represented in the form of maps. This plan examines current and future uses for GIS at DNRC.

DNRC WEB PRESENCE

The staff at DNRC has done an outstanding job of bringing the agency website to the point that it is at now. Providing agency information on the website has reached a fairly sophisticated level. Agency personnel who are not web design experts do most of the website development. Achieving further sophistication will require more effort

and expertise than the grass-roots level that the department has used in the past. The plan explores some options that will allow DNRC to advance to the next level of website development.

INFORMATION TECHNOLOGY PLAN

COMPUTER TRAINING

DNRC needs to develop computer-training resources and procedures. Much of the current absence of training can be attributed to the lack of training programs and training facilities. This plan does not advocate legislative funding for department-wide training. Each division is in a much better position to determine training costs based on past expenses and expected employee turnover. This plan provides guidance for developing training programs within department business programs and provides support for the divisions in seeking funding for training.

Computer training is as much a part of the cost of doing business as are computers and employees. DNRC spends hundreds of thousands of dollars each year on computers but spends only a fraction of that on computer training. Currently at DNRC, there is a huge demand for training on Microsoft Office products (especially Access and Power Point), SABHRS modules, and other specific software packages being integrated into specific DNRC programs.

Classes for Microsoft Office products and SABHRS modules are available in Helena at the Helena College of Technology on a continuous basis. The Helena classes are convenient for Helena employees but inconvenient and, due to travel costs, expensive for DNRC employees outside of Helena. Currently, training on SABHRS modules is available only in Helena. Private software training providers do not offer this training due to the highly specialized and state-government-specific subject matter. Private software training on Microsoft Office products is available in most major communities. *Appendix D* is a list of training vendors across the state that offer classes on Microsoft Office products. Contact Bob Auer (406) 444-4948 for assistance in making arrangements with private software training vendors.

Another training option available to DNRC employees is media-based training (MBT). These training courses on software used in state government can be run on desktop computers. To find out what courses are available, go to the ISD training website: *http://www.state.mt.us/isd/current/training/mbt.htm*. To check out a course, contact ISD's Shawndelle Semans at (406) 444-3820. For more information on MBT courses, contact ISD's Trapper Badovinac at (406) 444-4917.

Each division and each office need to develop training evaluation procedures and training plans. Employees need to be surveyed at least once a year to determine software training needs. Supervisors need to evaluate training needs for all new hires. All employees working with SABHRS will need training on using PeopleSoft software or producing reports using Document Direct.

SABHRS

The SABHRS module for budget development went into use in March 1998, the asset management module went into use in September 1998, the human resources module went into use in April 1999, and the SABHRS general ledger module became active in July 1999.

Many problems were encountered with the SABHRS modules in the initial rollout. Currently, the problems with the modules are more specific in nature. One major problem DNRC is having with SABHRS is the lack of reports on personal services expenditures. The Department of Public Health and Human Services (DPHHS) has developed a data extract from the SABHRS database that provides the needed information. With some further refinements, the required personal services reports will be available.

Employees should report SABHRS software problems as soon as they are noticed. The contact at DNRC for reporting SABHRS problems is Al Christianson at (406) 444-4947. Problems may also be resolved by contacting the DNRC SABHRS help desk representatives listed in Table 2. Use these contacts as the first step in SABHRS problem resolution.

Table 2. DNRC SABHRS HELP DESK REPRESENTATIVES

SUBJECT AREA	CONTACT	PHONE NUMBER
Financial Functions		
• General Ledger	Al Christianson	444-4947
• Accounts Payable	Debbie Walter	444-6729
• Accounts Receivable	Joyce Naeher	444-4270
• Purchasing	Jeff Williams	444-6724
• Asset Management	Janice Yearry	444-6726
Human Resources Functions		
• Human Resources	Glenna McClure	444-6673
• Payroll	Glenna McClure	444-6673
• Benefits Administration	Glenna McClure	444-6673
• Time and Labor	Glenna McClure	444-6673
MBARS Functions	Ann Bauchman	444-6734
Desktop Issues	Jack Zanto	444-6715
LAN Administration	Jack Zanto	444-6715

COMPUTER HARDWARE AND SOFTWARE

HARDWARE

When possible, we need to look ahead to the requirements of expected software upgrades to guide us in our hardware purchases. Currently, we can look to future versions of Microsoft Windows and Mircosoft Office for hardware specifications. Microsoft Office 2000 and Windows 2000 have both been released in the past six months. The state will migrate to both of these software packages to keep current on Microsoft products.

The hardware requirements for the Microsoft Office 2000 Standard Edition are 32 megabytes (MB) of memory at a minimum (64 MB preferred), 200 MB hard disk space, a CD-ROM drive, VGA or higher video display, Windows 95 or higher operating system, and a mouse. The hardware requirements for Microsoft Windows 2000 are a 133 MHz Pentium-compatible CPU, 64 MB of RAM, and 1 gigabyte (GB) hard disk space.

To meet the requirements of Microsoft Office 2000 and to provide a hardware "cushion" for further upgrades all new computers should meet or exceed the specifications in Table 3.

Table 3. MINIMUM HARDWARE SPECIFICATIONS

COMPONENT	MINIMUM SPECIFICATION
Processor Clock Speed	500 MHz
Memory	128 MB
Hard Drive	10 GB
CD-ROM	40X Variable
Display	17" Color .26 Dot Pitch (DP)
Video Card Memory	8 MB
Operating System	Windows 98

SOFTWARE

Over the past year, the state has adopted the Microsoft Office 97 suite as the state standard for desktop software. This software is now on nearly every computer at DNRC. However, many users continue to use WordPerfect for their word processing. Using WordPerfect presents a problem when distributing documents to other users. WordPerfect documents do not always readily convert into Microsoft Word documents. Graphics and tables can be lost or corrupted. For the sake of efficiency, all department documents that will be shared with other users should be in Microsoft Word format. In addition, whenever possible, new documents should be created in Word format so that eventually the department can use Microsoft Word exclusively.

IT EQUIPMENT REPLACEMENT SCHEDULES

Any equipment replacement planning must recognize that equipment purchases are dependent on available equipment funding. No matter how well conceived the replacement schedule is, the equipment will not be purchased if funding is not available. This is a prime consideration in light of the fact that recent legislatures have made funding cuts directly to equipment budgets. At best, we can present equipment replacement plans as an ideal against which to measure actual replacement.

Desktop Computers

Nearly all of the computers the department buys come with a three-year warranty. If we were to use a three-year replacement strategy, all of our computers would be under warranty at all times. While a three-year replacement strategy would be ideal, budget constraints preclude this approach. In many cases, a computer that is three years old is adequate for user's tasks.

The problems with replacement intervals of four years or more are non-warranty repairs and obsolescence. The least of these problems is non-warranty repairs. Normally, catastrophic failures will occur within a computer's warranty period. If a part is going to fail, it will usually fail within the first year. Between three and five years, serious failures are rare.

A more serious problem is obsolescence. With the rapid changes in software, including operating systems, having current hardware is becoming more and more critical. New software packages have higher hardware requirements in terms of processors, memory, and disk space. Without newer hardware, the current software is unusable.

The Department of Administration has suggested that agencies replace desktop computers after four years. Computers should be replaced after four years of service at DNRC.

Network File Servers

Network file servers use a different operating system than desktop computers, and "forced" equipment replacement due to operating system changes is not as frequent. However, the state began moving to a new version of Novell Netware (version 5.0) in 1999. The Netware version 5 minimum specifications for new servers are a 400 MHz Pentium II or III processor, 128 MB of RAM, and 10 gigabytes of hard disk space. A three-year replacement cycle is recommended for network file servers due to the number of DNRC employees who require network services. If servers are kept past the standard three-year warranty period, extended service contracts are required, and the server's hard drives should be replaced.

Division budget managers with offices affected by the field office networking project must be aware and plan for server replacement. Funding granted by the 1999 legislature for the networking project paid for file servers in 21 of our field offices. However, funding is not in place for three years from now, in 2002 and 2003, when these servers are due to be replaced. The cost for a typical field office server is around $1,500.00.

Laser Printers

A fixed replacement schedule for laser printers is not appropriate. The number of pages printed annually can vary widely due to the number and type of users who use a particular laser printer. Laser printer replacement should be based on (1) pages printed, or (2) component failure where the cost to repair exceeds the current value. A laser printer should have major moving parts replaced every 100,000 pages. No laser should be kept past 500,000 pages.

DATA COMMUNICATIONS

Computer networks have proven to be an indispensable use of technology in business and government. Network users can share data and resources and communicate in highly effective and efficient ways. Users in networked DNRC offices continually comment on how this technology has improved their productivity, their ability to communicate, and their attitude toward work.

Networking a field office first involves installing a local area network (LAN) at the office. The LAN connects the office computers and printers. This step provides software and data sharing from a common file server. Also, any printers are accessible to all users. Once the LAN is in place, the office can then be connected to the state's wide-area network, Summitnet. This step provides on-line e-mail, MT PRRIME access, mainframe access, Internet access, and access to data on any file server on Summitnet.

DNRC is a highly decentralized agency with over 30 offices across the state. Using information technology to improve communications and the flow of information between our offices is in the best interest of state government and the public.

The schedule to install networks in each of our field offices is shown in Table 4. If an office is too small to network reasonably, it is so noted. The smaller offices will connect to e-mail and the Internet through private Internet providers.

Table 4. NETWORKING FIELD OFFICES – INSTALLATION DATES

OFFICE	LOCATON	INSTALL DATE	STATUS
NWLO Kalispell Land Office	Kalispell	1990	Networked
ELO/Miles City CARDD	Miles City	1995	Networked
Helena RO	Helena	1996	Networked
Billings O&G	Billings	1997	Networked
NELO/Lewistown RO	Lewistown	07/01/99	Networked
SLO/ Billings RO	Billings	08/01/99	Networked
Stillwater Unit	Olney	09/01/99	Networked
CLO	Helena	10/01/99	Networked
Missoula RO	Missoula	11/01/99	Networked
Swan Unit	Swan	01/01/00	Networked
Plains Unit	Plains	02/01/00	Networked
Bozeman Unit/Bozeman RO	Bozeman	03/01/00	Networked
Missoula Unit	Missoula	04/01/00	Pending
Havre Unit/Havre RO	Havre	05/01/00	Pending
Kalispell RO	Kalispell	07/01/00	Pending
Libby Unit	Libby	08/01/00	Pending
Anaconda Unit	Anaconda	09/01/00	Pending
Glasgow Unit/RO	Glasgow	10/01/00	Networked
Equip. Develop. Center	Missoula	11/01/00	Pending
Air Operations	Helena	01/01/01	Networked
Dillon Unit	Dillon	02/01/01	Pending
Helena Interagency Dispatch	Helena	03/01/01	Pending
Clearwater Unit	Greenough	04/01/01	Pending
Conrad Unit	Conrad	05/01/01	Pending
Shelby O&G	Shelby	06/01/01	Pending
Hamilton Unit	Hamilton	06/15/01	Pending
NRCC	Missoula	No Network Planned	N/a
Polson Field Office	Polson	No Network Planned	N/a
Lincoln IA	Lincoln	No Network Planned	N/a
CARD	Roundup	No Network Planned	N/a
Glendive O&G	Glendive	No Network Planned	N/a
Plentywood O&G	Plentywood	No Network Planned	N/a
Roundup O&G	Roundup	No Network Planned	N/a
Broadwater Dam	Toston	No Network Planned	N/a
Garrison IA	Garrison	No Network Planned	N/a
Boorman IA	Boorman	No Network Planned	N/a
Lima IA	Lima	No Network Planned	N/a

CARDD-Conservation and Resource Development Division, CLO – Central Land Office, ELO-Eastern Land Office, IA-Initial Attack, NELO – Northeastern Land Office, NRCC – Northern Rockies Coordination Center, NWLO-Northwestern Land Office, O&G-Oil and Gas Conservation Division, RO – Regional Office, SLO – Southern Land Office

MINIMUM LEVEL OF TECHNOLOGY

Desktop hardware requirements for networking a computer are minimal compared to requirements for standard DNRC software. Windows 98 and Microsoft Outlook requirements exceed the needed hardware levels for networking. In fact, the deciding factor in whether a computer is "network-ready" is whether it is "Microsoft Outlook-ready" since the primary desktop software delivered through networking is Outlook. The hardware requirements for Outlook are 32 MB of RAM (64 MB preferred), 500 MB hard disk space, a CD-ROM drive, VGA or higher video display, Windows 95 or higher operating system, and a mouse.

ISD MONTHLY SUBSCRIPTION FEES

A major obstacle to networking computers in the past has been the ISD monthly subscription fee. ISD obtains all of its funding by billing other agencies for services. The billing includes mainframe on-line and processing charges and a monthly subscription fee for each device connected to the state's computer networks. The monthly charge for Fiscal Year (FY) 2000 and FY 2001 is $64.59 per device, meaning computers and printers connected directly to the networks.

In March of the year before a legislative session (March of even-numbered years), ISD sends a survey form to IT managers at all of the agencies, asking them for a count of the number of network devices anticipated for the coming biennium. In March 1998, DNRC supplied the number of devices we intend to network in FY 2000 and FY 2001. ISD then submitted these counts and their associated costs to the Governor's Budget Office. The budget office in turn builds those costs into our base operating budget. If a program is supported by something other than general funds, the budget office may increase that program's spending authority only and not provide any additional funding. All devices, including those in the field office networking project, were funded and appropriated. Budget managers have these funds in place for these devices.

MAJOR SOFTWARE SYSTEMS

All of the department's large software systems were developed before personal computers and personal computer networks had the capabilities they possess today. Our large systems—water rights, trust land management, oil and gas, and fire protection—were developed to reside on the mainframe platform, which was state-of-the-art 10 to 20 years ago.

Advances in information technology have drastically changed the way we store and use data today. Following is a discussion of the disadvantages of mainframe databases, the advantages of modern databases, and other software design considerations.

- Reporting - Users cannot perform *ad hoc* queries on our current mainframe databases. Modern database software is designed to provide easy *ad hoc* reporting. One of the primary advantages of a modern database is that users can type in a query and, within minutes, have a printed report detailing exactly the information they are seeking.

- Interface - One of the most common complaints with the current mainframe systems is the primitive interaction with the user. Users today are used to Windows-type applications, where the mouse is used as much as the keyboard,

and commonalities between applications make learning and using new software very easy.

- Training - Training new users on the mainframe systems is a long and expensive task. The user interface with a modern database, however, is identical to all other desktop software in terms of features and screen functions. This aspect greatly reduces the costs of user training.

- GIS Applications - GIS is a type of computer software perfectly suited for natural resource management. However, GIS applications do not work with the trust lands or water rights data as they are stored on the mainframe today. If the trust lands and water rights data were stored in a modern database, we would be able to build GIS applications that directly interface with the data even as they change from day to day.

- Data Integration - The value of DNRC's large, natural resource databases lies not in the original development cost of the software systems, but in the currently stored data. The data make these systems incredibly valuable, and we should aggressively take full advantage of these resources. With water rights, trust lands, oil and gas, and fire protection redesigned to integrate with each other, all of these data could be treated as if they were a single resource management database.

- Public Access - Internet access to secured regions of our databases would be consistent with the state goal of open government and could potentially reduce the number of phone queries. Since the data in our databases is public information, it should be readily available to the public. The major concern here is protecting the data from unwanted tampering or vandalism, so certain restrictions and protections would be incorporated. Many of the phone queries we respond to daily would be unnecessary if the public could access our data through the Internet.

DATABASE REDESIGN STATUS

The database redesign objective was originally presented in the 1998 *IT Plan*. Since that time, this objective has received overwhelming support. Work is currently underway to migrate all of our mainframe-based systems to other platforms. The various development teams are working with each other to ensure agency-wide consistency and integration.

What follows is a system-by-system status report. Central to all of these development efforts is coordination. Integration between these databases is dependent upon common data elements such as legal land descriptions and geocodes. The format of these fields needs to be consistent in each database to make integration possible and efficient. To this end, project managers need to meet and share data definitions.

Trust Lands Management System

DNRC presented legislation to the 1999 legislature that requested authorization to amortize the cost of implementing a new system over seven years by "borrowing" up to $600,000 through the Board of Investments and repaying that amount from the Trust Lands Management Division's resource development account. This legislative effort was successful, and TLMD and the Information Technology Bureau have formed a task force that is currently putting together a Request for Proposals (RFP). The task force is also reviewing existing trust land management systems, one of which is available for purchase from the State of Utah. The resulting RFP will request either a full design or appropriate modification and enhancement of the Utah system.

Whether the Trust Lands Management Division adopts the Utah system or builds a new system from the ground up, a full-time database administrator/ programmer will be required. The IT Bureau Chief performs system analysis on the current system. Programming is performed through a contract with ISD. The current system manages only agriculture, grazing, and special use leases. The new system will incorporate all trust land activity, including forest management, minerals, special uses, and agriculture, and grazing. Due to the expanded responsibilities of administering the new system, a grade 16 system analyst/ programmer will replace the functions performed by the IT Bureau Chief and the contacted services. The total cost for a grade 16 full-time employee (FTE) is $48,000.

Water Rights System

During the second quarter of Fiscal Year 2000, the Water Rights Bureau decided to pursue the option of hiring a contractor to accomplish the conversion of the water rights database from the mainframe to a relational database. A project coordinator was hired to develop system requirements and continue needs analysis. A decision has been made to choose a contractor from the Management Information Services (MIS) Contract list. It is anticipated that a contractor will be chosen and development will begin before the end of the third quarter of FY 2000.

Approximately $300,000 has been allocated to this project for the remainder of FY 2000 and for FY 2001. This money will likely cover the core phases of the database conversion process. It will not cover hardware and software costs and additional needs beyond the core system. Hardware and software costs are estimated at $45,000. The bureau has $16,000 in the budget for hardware, leaving $39,000 that will be needed to implement the new database system. The new system will integrate remote systems in the regional offices and at the Montana Water Court. It will also integrate with existing Geographic Information Systems (GIS) to increase the Water Resources Division's ability to manage water resources throughout the state.

Additional needs have been identified that cannot be covered under the existing budget. These needs fall into two project phases: website development, and development of a comprehensive database of all policy and procedure manuals.

The bureau has contacted the Montana State Library's Natural Resource Information System (NRIS) staff regarding website development. The estimated cost for initial development is $20,000. There will be ongoing costs associated with maintenance and continued development. If these costs must be borne directly by the bureau, they will be approximately $10,000 per year. The goal for the website development is to allow the public access to a larger amount of water-right-related data, timely access to the data, and access to GIS maps of the places of use, points of diversion, etc., for existing water rights. The website will also provide information about administrative hearings and Water Court activities.

The database conversion will allow staff to conduct much more of their work directly on the computer; thus, it will reduce paperwork and duplicated effort. Based on this move from paper to the computer, it is important to have a comprehensive database of the policy and procedure manuals available to all staff members. This development would greatly benefit new employees as well as current employees. The cost for this project is estimated at $40,000.

Total costs for the water rights proposals are $109,000.

Oil and Gas System

The Oil and Gas Conservation Division has participated in a number of federally funded grants to create a new system to house oil and gas data. Key issues in the development of the database have been compatibility among the oil-producing states, the ability to access data necessary for regulatory decisions, GIS compatibility, and addressing the data needs of the public. The new database is in use in the Billings office, and when completed, will allow Internet access to oil and gas data by the public and by state employees at remote sites. The existing mainframe database cannot be removed from service at the present time due to ongoing data requirements of the Department of Revenue and the Trust Lands Management Division of DNRC. However, it is envisioned that the needs of the other governmental agencies will also be addressed initially through the Internet access project, allowing the gradual phasing out of the mainframe database over the next year.

Hazard Reduction Agreements (HRA) System

The new Microsoft Access HRA computer program is nearing completion. It is specific to the statewide accounting and database maintained in the Service Forestry Bureau in Missoula. This will be the completion of phase I of a three-phase programming process to integrate all forestry offices and purchaser mills with the Missoula master

program. The Phase II current request involves development of a compatible Access program to interface with the master program in Missoula. The request is for program development only. Installation in the 17 area and unit offices would be done by department IT staff. This system would replace the present postal delivery system that results in double and sometimes triple entry of the same data to maintain databases. Database management efficiency and accuracy would increase resulting in personal services timesavings and better customer service.

Fire Protection System

Under Montana law, owners of forest land must provide adequate fire protection for that land. Landowners may comply with this law by paying the state a fee, in exchange for the state's providing fire protection services. The state has the responsibility of assessing and collecting these fees, and distributing the monies to the proper protection agency. The Fire and Aviation Management Bureau of the Montana Department of Natural Resources and Conservation manages the Fire Protection Assessment Program through the use of a customized computerized database application called "ASSESS."

The bureau would like to re-write the application using current state-supported software packages. Current standards would allow effective electronic communication with county assessors as well as the Department of Revenue. Additional enhancements and refinements could also be added to allow more efficient operation and assessments of fees.

This ASSESS system is approximately 10 years old and seriously out-of-date compared to today's standards. The need for electronic communication is greater today than in the past, and the technology has passed the point of being able to salvage the old application. It is only a matter of time (and that time is short) before the application is totally incompatible with current operating systems and state-sanctioned software. Numerous "work-a-rounds" are currently in place to deal with the incompatibility issues.

The bureau would like to hire a local contractor to take on the project and work closely with the bureau in developing the application. The bureau is currently in the process of drafting a needs analysis that, when completed could serve as a Request for Proposals. Based on the estimated cost of similar projects, the bureau estimates a cost of approximately $120,000.

MANAGING NATURAL RESOURCES USING GIS

DNRC GIS objectives are consistent with overall DNRC IT objectives. The large DNRC databases need to be redesigned into a GIS-ready format and, as part of the database

redesign, the data structure in the databases must allow integration between the databases. GIS applications can then be built over live, production data.

The first step toward GIS applications using DNRC data is to redesign the current mainframe databases. Coordination will be required between the GIS developers in the department and the database developers to ensure that database the designs are GIS-ready.

Work on the Department of Administration's cadastral mapping project is ongoing. This project will create a GIS database of all land ownership in Montana, including trust lands. Since this is an all-inclusive, land-mapping project, care must be taken not to duplicate the efforts of the cadastral project within DNRC. It is expected that this project will include state-owned surface lands. It is not expected to include mineral or riverbed ownership, which are data elements that are essential to the management of state-owned lands. This project is focusing on information required by the Department of Revenue for tax administration purposes. It may take several years to complete so patience may be required on our part. The Board of Oil and Gas Conservation and the Trust Land Management Division may need to explore utilization of other sources for suitable GIS base layer information in order to utilize GIS in their programs in a reasonable time frame.

Currently the Water Resources Division and the Reserved Water Rights Compact Commission are using ArcInfo. The Forest Management Bureau is using PAMAP. Expertise in one package does not carry over to the other package. For purposes of data sharing, data acquisition, and user training, a single GIS software package would be ideal. But, some GIS software packages are more appropriate to particular applications than others. GIS software should be selected based on the intended project's spatial analysis demands. GIS software selected for DNRC applications must adhere to open GIS standards. These standards ensure that data used in one software package will be transferable to other GIS software packages.

Many DNRC offices are buying computers specifically for GIS applications. Table 5 lists the preferred configuration for a GIS workstation.

Table 5. PREFERRED GIS WORKSTATION SPECIFICATIONS

COMPONENT	MINIMUM SPECIFICATION
Make and Model	Dell Precision Workstation
Processor	Single or Dual 500 MHz Pentium III
Memory	256 MB
Hard Drive	27 GB
CD-ROM	8X/4X/32X CD Read-Write
Display	21" Color .26 Dot Pitch
Video Card Memory	32 MB
Operating System	Windows NT

Once the databases are in place on the database server in GIS-ready format, GIS applications could be developed as needed, and *ad hoc* applications could be generated on demand. GIS "viewer" packages could be used in networked field offices to query the databases and generate GIS maps and data. Following is a discussion of current and anticipated needs, grouped by division.

TRUST LANDS MANAGEMENT DIVISION

Forested Lands

The Forest Management Bureau has been heavily involved in GIS work for the past 10 years. GIS is being used by the field offices for timber harvest analysis, hydrology assessment, wildlife habitat identification, old growth management, stand level inventory, establishment of effective patch sizes, and location of roads and structures. Currently, there is a statewide ownership map available (scale 1:100,000) which distinguishes DNRC-managed parcels from other state-owned parcels. There are cartographic feature file maps (scale 1:24,000) developed by the U.S. Forest Service (USFS) which have been split into separate layers (PLSS, roads, hydrology, and others) that cover almost all of the Northwestern Land Office (NWLO) and the Southwestern Land Office (SWLO). Stand level inventory polygon boundaries have been digitized for all of the blocked ownership. In about two and one-half years, all of DNRC's forest land in the NWLO and the SWLO will be digitized and in the GIS. The Forest Management Bureau needs an effective system for distributing GIS data to field offices. Currently Forest Management is planning to send extracts from the master database to the field offices. Over time, the copies will become out-of-date and have to be refreshed as the master database is updated. A user-friendly and fast file transfer protocol (FTP) site that could be accessed by the field offices via the Internet would resolve this distribution problem.

Non-Forested Lands

Although not required today on agricultural and grazing lands, GIS uses are anticipated. Some potential agricultural and grazing uses are land use, soil types, recreational access, wildlife habitat, cultural sites, commodity types, and animal types. Potential subsurface mapping and analysis could be done for subsurface ownership, mineral reserves, oil and gas drilling locations, and geologic data. The Minerals Management Bureau would make frequent use of an oil-and-gas GIS application that includes standard Board of Oil and Gas Conservation well location, production, and spacing information overlaid on state trust land mineral and surface ownership layers.

The Board of Oil and Gas Conservation is making significant advances in its implementation of GIS, and TLMD has now begun an effort to redesign the Trust Land

Management System to include compatibility with GIS applications. Implementation of GIS applications in agricultural, grazing, and minerals trust land management requires a statewide base layer for both surface and mineral trust ownership. As mentioned above, the Department of Administration's cadastral mapping project is expected to take years to complete, and it is not expected to address mineral or riverbed ownership. Therefore, the Trust Land Management Division may need to explore utilization of other sources for suitable GIS base layer information in order to utilize GIS in its land management responsibilities within a reasonable time frame.

RESERVED WATER RIGHTS COMPACT COMMISSION

The Reserved Water Rights Compact Commission (RWRCC) currently uses ArcInfo on Unix computers as well as ArcView on Intel computers. Commission staff create and maintain a graphic water rights database in ArcInfo using data extracted from the water rights system on the mainframe. RWRCC is also creating photo images for many of its project areas in the state.

The data downloaded from the water rights system on the mainframe are reformatted for use in ArcInfo. While this is effective, the data become outdated rather quickly, creating integrity problems.

WATER RESOURCES DIVISION

All bureaus in the division utilize spatial data in day-to-day operations. Spatial climate data is modeled with watershed basins to determine runoff situations in order to design dam spillways. Watershed management works with data on water rights, water quality, and relationships between different types of water users to address and analyze issues related to hydropower users and other water interests. Spatial data on groundwater development and its effects on wetlands and related lands are used for clarifying management decisions. For example, spatial data were used in the analysis of methane development effects on groundwater and surface waters in eastern Montana. Historical information digitized from the *Water Resource Survey* maps produced in the 1940s, 1950s, and 1960s and used with the spatial data. Incorporating aerial photos into the spatial database also increases the amount of information available to plan, monitor, and analyze the water resource.

There has been considerable development of GIS throughout the Water Resources Division (WRD) in the past two years. The number of specialists using GIS software has increased from approximately 5 or 6 people two years ago to more than 65 people who have had Introduction to ArcView training by certified software instructors. With support from the division GIS, many of the personnel with ArcView training are generating project information for analysis, as well as maps for reports and meetings. There are currently 18 software licenses for ArcView in the division, with many more requests for software pending. Requests for data in spatial format

are increasing from the public and from department personnel. GIS applications or cartographic products are universally included in the scope of all upcoming natural resource and water resource projects.

The Water Resources Division has a great supply of valuable data that are not readily usable for GIS applications. Today, these data can be converted with ArcInfo and UNIX scripts to bring into GIS formats. However, because the conversions are based on a one-time data download, the information becomes dated and no longer accurate. It is imperative that the GIS spatial data be linked with the water rights database to give the public access to current information. Montana agencies will also benefit from having water information available in a spatial format. The Water Resources Division is currently designing and preparing a migration of the water rights database from a mainframe environment to a tabular, object-oriented database. To link the GIS spatial data to the tabular database, water-related data conversions will need to take place, which will also accommodate historical data preservation.

Expansion of the current GIS staff from one GIS professional supporting the division to a permanent WRD GIS Program is a top priority within the division. The primary responsibility of WRD is to supply information to the public in an efficient and effective format. This information spans from multi-state watershed management projects to individual landowner water right issues. Montana's Constitution mandates the Water Resources Division to maintain the centralized water rights database and make it conducive to public access. GIS spatial data presented in an Internet-accessible format will increase the ability of the division to provide services to the public and thus fulfill its responsibility. Another responsibility of the WRD GIS is to support internal GIS projects, in both the central office bureaus and regional offices. Eight regional offices that are located throughout the state require on-site GIS support, which is currently difficult due to the limited staffing.

An *ad hoc* committee of WRD personnel and advisory members from the Montana State Library Natural Resources Information System have made the following recommendations for two WRD GIS Program Executive Planning Process (EPP) proposals. One recommendation is to increase the WRD GIS permanent personnel and equipment to support the increased GIS demands and responsibilities as stated above. The other recommendation is a one-time data preservation/conversion program to convert statewide water rights information, both historical and current, into standardized spatial data formats. The EPP proposals are requesting biennium funding as follows. The proposal for permanent expansion of the Water Resources Division GIS Program is for additional personnel and start-up costs for GIS equipment and software at a cost of $371,520. The proposal for the one-time Water Rights Spatial Data Conversion / Preservation Program is for personnel and GIS equipment and software at a cost of $215,762.

FORESTRY DIVISION

Budget and Facilities Management Bureau

The Forestry Division plans to hire a contractor to locate all phone lines, power lines, septic systems, water lines, and computer cables in the DNRC Forestry Complex in Missoula. Currently, the complex's buildings and roads have been mapped and the data stored in the Forest Management Bureau's GIS. The data collected by the contractor will be added to the map in the GIS. This will provide the Administrative Services Section with the ability to quickly and easily produce maps showing the location of phone and utility lines for future repairs, maintenance work, and other uses.

Fire and Aviation Management Bureau

The Fire and Aviation Management Bureau maintains a mainframe database on fire protection assessments (FPA). These data are used to record land parcels for which the bureau provides fire protection. These tracts of land are the bureau's fire protection boundaries. A GIS system that could graphically represent these boundaries would be of value to determine responsibilities for fire suppression, determine suppression strategy, locate structures and water sources, and aid in dispatch. The GIS data could be shared with other emergency service entities and contribute to statewide emergency services GIS applications.

OIL AND GAS CONSERVATION DIVISION

The Oil and Gas Conservation Division has a large collection of information on oil and natural gas drilling and production, regulatory requirements, and underground injection associated with oil and gas activities, the majority of which can be displayed spatially. These data can be utilized in many potential GIS applications of interest to other governmental entities and the public. For example, a GIS system could display well locations and the boundaries of oil and gas accumulations, and would allow a three-dimensional analysis of geologic data. Future utilization of spatial datasets from other agencies would assist decision making within the division.

The oil and gas database developed by the division has been designed to store data in a format compatible with existing and future GIS applications, and the database software can utilize available coverages in standard GIS formats for data querying.

DNRC WEB PRESENCE

Currently, DNRC's website offers a wide range of information about the agency. For the next several years, DNRC will continue to add agency information and forms for downloading.

The 1999 legislature issued a new requirement for state agencies to place "specific and measurable goals, benchmarks, and objectives" on their websites beginning July 1, 1999. Every six months afterward, each agency must report progress on its goals, benchmarks, and objectives to ensure that they are attained. Each division is responsible for posting division goals, benchmarks, and objectives and updating progress toward these goals.

Greater consistency in website design is needed throughout our pages. Division webmasters met in January 2000 to coordinate with each other and with the department webmaster to arrive at common elements and a consistent look and feel to the entire DNRC web area. The coordination process is ongoing.

Below is a discussion of website efforts throughout the department.

The Fire and Aviation Management Bureau's website is designed to disseminate information about program responsibility, announce upcoming events and conferences, and provide links to other websites with programs and information of interest to our employees or our cooperators. The bureau is looking at the use of on-line registration for bureau-sponsored conferences and a File Transfer Protocol (FTP) site for uploading and downloading fire statistics and maps, which will be available directly from a bureau-maintained database. This will require a dedicated web server. The availability of timely and accurate information, both for use by the bureau and for dissemination to cooperators and the public, is the ultimate goal.

The Trust Land Management Division (TLMD) portion of the DNRC website includes program information derived from annual report information. In connection with timber sales, the Forest Management Bureau is posting the Notice of Sale, Prospectus, and bid results on DNRC's website. In addition, the Minerals Management Bureau uses the Internet to advertise oil and gas lease sales by way of a calendar and makes lease sale lists and results available for downloading from our site. TLMD will increase the amount of information available through the website as situations warrant and resources allow.

The Water Resources Division has developed pages that offer information about water rights, floodplain management, dams and canals, water supply and management, the Board of Water Well Contractors, Montana watersheds, and the Montana Watercourse. The WRD pages offer links to other websites such as the Bureau of Mines to locate well logs.

When the DNRC mainframe databases are converted to an Internet format, we will be able to offer a greater variety of services to Internet users. If our databases were Internet-accessible, the public would be able to make inquiries into our data over the Internet. These queries could be in the form of on-line inquiry screens using the same screens that DNRC users use. The queries could be custom reports displayed to the Internet user's screen. Potentially this database interaction could reduce phone inquiries concerning agency data. DNRC users at remote locations could use the Internet interface to view and report data in the same way as public users. In addition, field offices could input data to DNRC databases rather than sending update information to Helena, as some of the offices do now.

Website development will continue, and our level of commitment to doing business in this way will continue to grow. Development and support of DNRC web activity will demand a dedicated employee to maintain our site. DNRC may not be able to develop interactive web pages and web interfaces to our databases without a dedicated full-time web administrator. A new position in the Information Technology Bureau needs to be created with the sole responsibility of maintaining DNRC's website. An adequate level of expertise could be found at a grade 15 salary with an annual cost of $35,700 annually.

APPENDICES

Appendix A. Definition of Terms

EPP – Executive Planning Process. A process whereby agencies develop plans and justifications for special projects that require funding from the legislature. The process usually begins in March of the year prior to a legislative session.

GIS – Geographic Information System. Computer software and data used to display data in a spatial manner. Example: descriptions of river systems can be displayed on a map.

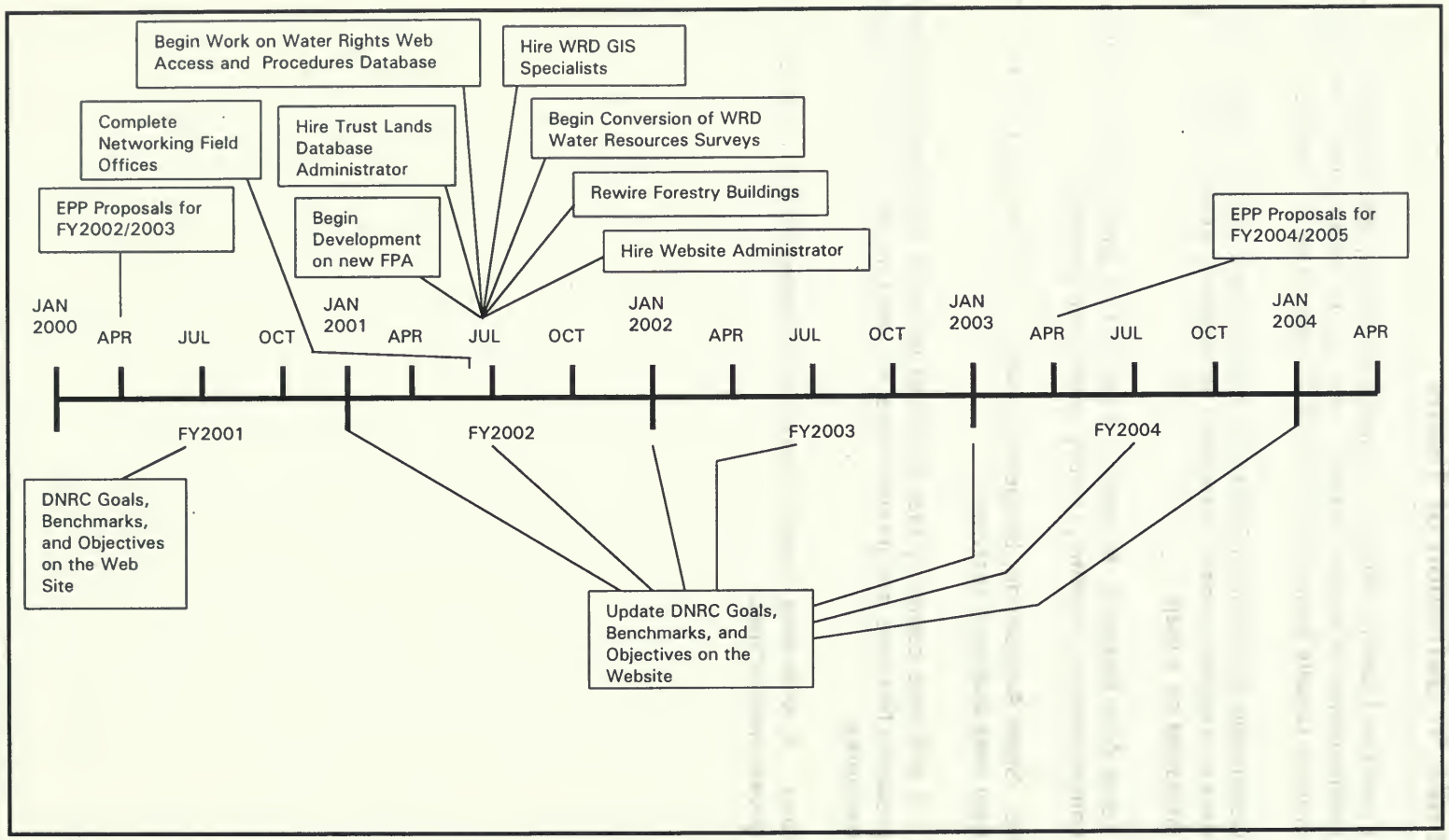
LAN – Local Area Network. A system of computers and computer devices communicating together, usually within one building.

SABHRS - State Accounting, Budgeting, and Human Resources System. The state's new core business software.

Novell – A software company that publishes network operating software. The products Netware and Internetware are used on almost all state computer networks.

Summitnet – A wide-area computer network intended to link together all state government offices.

Appendix B. Time Lines



Appendix C. Priorities for IT Objectives

The IT Planning Task Force prioritized these objectives based on the most value to the department and the required sequence when certain objectives must be completed before other objectives can begin.

Redesign Fire Protection System – This is a highly critical system tracking millions of dollars in revenue annually. DNRC must have current reliable software for this program.

Water Resources GIS Program – Water resource management lends itself to GIS technology. Aggressive use of GIS in this program ensures effective management of water resources in the future.

Trust Land Database Administrator – Bringing all of the trust land business functions under one system will require a higher level of support than can now be supplied by a portion of time from IT professionals with multiple other duties.

Rewire Data Lines in Missoula Forestry Complex – Old, non-specification wiring in these buildings will continue to cause network problems until this problem is fixed. The benefit of this project far outweighs the expense.

WRD Data Conversion/Document Preservation – This one-time data preservation/conversion program is needed to convert statewide water rights information, both historical and current, into standardized spatial data formats.

Hazard Reduction Agreements (HRA) System Phase II Development -- This is a continuation of a redesign effort begun two years ago with the core system. Phase II allows remote access to the central HRA system in Missoula.

WRD Water Rights Hardware, Water Rights Web Access, and Policy and Procedures Database – This objective involves computer hardware to house the new water rights database, a web access to the new water rights database, and converting paper policies and procedure manuals to on-line documents.

DNRC Website Specialist – One grade 15 FTE should be dedicated to maintaining and enhancing DNRC's website.

Funding for NRIS – NRIS has asked us to help fund its operations.

Appendix D. Software Training Vendors

Billings
Computer Training Group .....(406) 252-1212
Billings MT 59105-4810

New Horizons Computer Learning Center .....(406) 256-0300
401 N 31
Billings MT 59101-1200

Resource One Computer Services .....(406) 656-8810
Billings MT 59102-4027

Rocky Mountain Technology Group .....(406) 247-5099
207 N Broadway
Billings MT

Butte
Computers Plus .....(406) 723-3469
Butte MT

Dillon
Dillon-Net Office .....(406) 683-6281
Dillon MT 59725-2752

Kalispell
Computer Instruction & Assist.....(406) 752-6650
Kalispell MT 59901-4451

Missoula
Watercolor Computer Training .....(406) 542-1573
Missoula MT

Appendix E. Task Force Members

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